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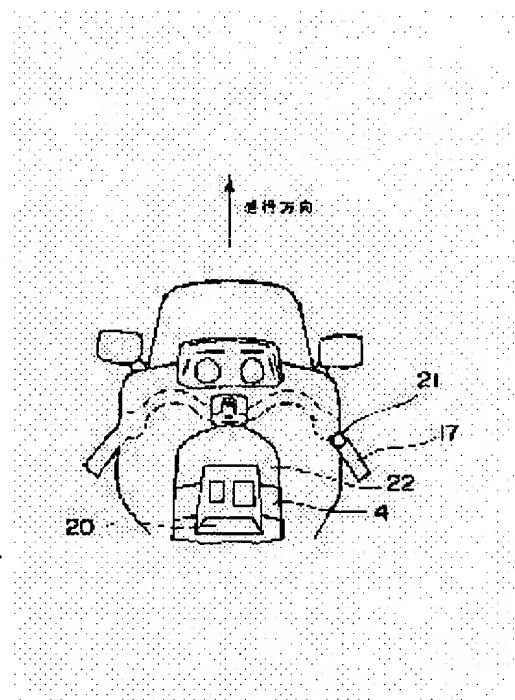
(54) ON-VEHICLE BEACON RECEIVER

(57)Abstract:

PURPOSE: To contribute to safe driving on a two-wheeled vehicle by providing a switch for operating a receiver nearby the handlebars and then operating the receiver without putting a hand off the handlebars.

CONSTITUTION: A hand grip 17, a receiver 20, an operation switch 21, and a fuel tank 22 are provided, the receiver 20 is fixed on the fuel tank 22 of the two-wheeled vehicle by a belt 4, and the operation switch 21 is arranged at the grip 17 of the handlebars. The operation switch 21 consists of buttons (a) and (b), connection jacks for the operation switch 21 and receiver 20, and a band for fitting the operation switch. Thus, the operation switch 21 is arranged nearby the grip of the handlebars, so the driver can operate the receiver 20

without putting the hand off the handlebars. For example, even while the two-wheeled vehicle travels on a highway, the receiver 20 can be operated in safety. The operation switch 21 is arranged preferably nearby the grip for the left hand since the grip for the right hand is rotated in wrist so as to operate the accelerator.



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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] The traffic information signal transmitted from the beacon installed in the crossing of a road side etc. is used, and it is especially related with the suitable mounted beacon receiver for loading of two-wheel barrows, such as a motorbike and a bicycle, about the mounted beacon receiver displayed on the indicating equipment which had this mounted.

[0002]

[Description of the Prior Art] An antenna (beacon) is installed for every [every crossing of a road, and] distance of 300m, the characteristic traffic information based on the installation location of each beacon to this installed beacon etc. is transmitted, the car under transit receives this sending signal, and displays the information extracted from an input signal on a mounted display, and the Road Automobile Communication System with an operator able to grasp various information (for example, delay information etc.) easily is proposed.

[0003] For example, with the mounted beacon receiver for four-flower vehicles, for example a receiving antenna is fixed to the rear par shell section of a car, a receiver is fixed to a trunk, and it considers displaying on the display in which the receipt information was prepared near the driver's seat.

[0004] Moreover, although the mounted beacon receiver as equipment only for two-flower vehicles is not proposed, the system which means that an operator is provided with various kinds of guidance information, and was similar is indicated by JP,59-90200,A.

[0005]

[Problem(s) to be Solved by the Invention] From the beacon which is a Road Automobile Communication System, as for the information served for a car, various things else [, such as currency information of a car, guidance information on main facilities, and delay information], such as accident, construction, traffic restriction, and the weather, are proposed, and it will be expected from now on that service information increases further as utilization progresses.

[0006] Therefore, not only a four-flower vehicle but the expectation for offer of the data utility means to two-flower vehicles, such as a motorbike and a bicycle, is great in the future.

[0007] However, in order it is difficult from standpoints, such as structure of a car, operability, and safety, to apply to a two-flower vehicle as it is and to propose the beacon receiver for four-flower vehicles as an object for two-flower vehicles, it is necessary to add an improvement to the following points.

[0008] In the first place, "it is compact" in "operability is good" and the second first "a theft is hard to be carried out" and the fourth. ["waterproofness is good" and the third] Among these, the improvement in operability also has slag with safety, and has been the especially important technical problem which must be solved.

[0009]

[Means for Solving the Problem] Since the above-mentioned technical problem is solved, the following means can be considered.

[0010] The antenna which receives the information signal sent from the beacon installed in the road side, The digital disposal circuit which processes an input signal and has the function to perform predetermined processing according to the given directions, further, In the mounted beacon receiver constituted by having the actuation switch which has the drop which has the function which displays receipt information, the loudspeaker which outputs the sound signal included in receipt information, and the function to give directions to a signal-processing means Holding said antenna, a digital disposal circuit, a drop, and a loudspeaker in at least one case, this case is a mounted beacon receiver which has the installation section to a car. Moreover, the antenna which receives the information signal sent from the beacon installed in the road side, The digital disposal circuit which processes an input signal and has the function to perform predetermined processing according to the given directions, further, In the mounted beacon receiver for two-wheel barrows constituted by having the actuation switch which has the drop which has the function which displays receipt information, the loudspeaker which outputs the sound signal included in receipt information, and the function to give directions to a signal-processing means Said antenna, a digital disposal circuit, a drop, and a loudspeaker are held in at least one case, and this case has the installation section to a two-wheel barrow, and the mounted beacon receiver for two-wheel barrows which has the means which equips the part of the grip of the handlebar of a two-wheel barrow with said actuation switch is also considered.

[0011]

[Function] A receiving antenna, a signal-processing means, a display means, and a loudspeaker are constituted as one, this is arranged on the gas tank of a motorbike, and an actuation switch is carried out to the configuration prepared near the handle of a motorbike.

[0012] Since the actuation switch is formed near the handle, for the receiver actuation at the time of transit, the situation which carries out operation without holding can be avoided, and safe actuation and safe operation can be performed.

[0013] Moreover, miniaturization of a beacon receiver is attained and becomes easy to perform water proofing etc. by having constituted except the actuation switch in one.

[0014]

[Example] Hereafter, the example concerning this invention is explained to a detail with reference to drawing.

[0015] Drawing 1 is the external view of the receiver in which one example by this invention was shown. 1 -- a loudspeaker and 2 -- a liquid crystal display and 3 are rubber putt, as for a dc-battery and 8, a receiving antenna and 4 have [a belt and 5 / the volume for volume control, and 7] these means, and the jack for an actuation switch and 6 are constituted.

[0016] First, the information transmitted from the beacon is received by the receiving antenna 3. As a receiving antenna 3 is shown in drawing 2, small and a highly efficient receiving property are realizable by constituting with a microstrip antenna (for example, it being the configuration of having carried out the laminating of the dielectric 10 and having formed the pattern 9 of an antenna further on the ground pattern 11).

[0017] Next, as shown in drawing 3, recovery processing of the signal received with the receiving antenna 3 is carried out in a receive section 12, and, as for this recovery signal, data processing is performed by the control section 13.

[0018] It is made to output the sound signal included in information by the loudspeaker, and the information which should be displayed is transmitted to a display 14 as a status signal.

[0019] In a display 14, processing which performs the information display to a liquid crystal display 2, for example is carried out (drawing 4 step 100).

[0020] While receipt information is displayed on a liquid crystal display 2, from a loudspeaker 1, the receiving sound "PONTSU" is emitted, for example and an operator can grasp that information was received by catching a receiving sound.

[0021] Moreover, an operator checks the contents of a display of a liquid crystal display 2, and acquires required information. The unnecessary information which became no more use is made to eliminate from a liquid crystal display 2 by what (drawing 4 step 200) the "a carbon button" (15 of drawing 6) of

an actuation switch is clicked for (drawing 4 step 300).

[0022] The volume 6 for volume control is volume adjusted so that a receiving sound may get across to an operator with moderate sound volume. Moreover, this receiver is fixed on the fuel tank of for example, a two-flower vehicle by the belt 4, and rubber slab 8 has the function which absorbs vibration which joins a receiver.

[0023] It is drawing 5 which showed the situation.

[0024] For 17, as for a receiver and 21, the grip of a handle and 20 are [an actuation switch and 22] fuel tanks. A receiver 20 is fixed on the fuel tank of a two-flower vehicle by the belt 4, and the actuation switch 21 is arranged at the grip 17 of a handle.

[0025] Next, the detail of the actuation switch 21 is shown in drawing 6 .

[0026] For 15, as for the b carbon button and 18, the a carbon button and 16 are [the connection jack of an actuation switch and a receiver and 19] actuation switch fork clips.

[0027] It is combined with the connection jack 5 (drawing 1) of a receiver, and the connection jack 18 carries out the duty which tells ON of the carbon button of an actuation switch, and the condition of OFF to a receiver.

[0028] In this example, a carbon button a shall have as an example the function to give the directions with which "yes" and a carbon button b "no" Become.

[0029] for example, the name of a place usually displayed on a display in a beacon system -- "the far name of a place" and "the near name of a place" (for example, when going a northeast path north, although "*****" and "*****" show the same direction) Although there is the mode which [the] is chosen and that either can be set up, if the a carbon button is clicked when choosing the information on "the far name of a place" with cursor 23 as shown in drawing 7 , the mode about the information on "the far name of a place" will be set up.

[0030] When making it the mode of the information on "the near name of a place", in order to move cursor 23 and to make the light switch on so that the b carbon button may be clicked once and the information on "the near name of a place" may be chosen, the a carbon button is clicked. The situation is shown in the flow chart of drawing 8 .

[0031] First, the cursor corresponding to "the far name of a place" blinks (step 800). Next, in choosing "the far name of a place" and not clicking and ("YES" is meant) choosing the a carbon button, it clicks the b carbon button (step 801). ("NO" is meant) When the a carbon button is clicked, a branch is carried out to step 804 and selection is completed. When the b carbon button is clicked, it progresses to step 802.

[0032] In step 802, the cursor corresponding to "the near name of a place" blinks.

[0033] Furthermore, in step 803, in choosing "the near name of a place", the a carbon button is clicked ("YES" is meant) and it ends selection (step 803). Moreover, when the b carbon button is clicked, a branch is carried out to step 800.

[0034] As mentioned above, button grabbing shows that the desired mode can be chosen.

[0035] Since the actuation switch is arranged near the grip of a handle according to this example, as it is shown in drawing 9 (24 is an operator's hand), since a receiver can be operated without an operator releasing his hold, a motorbike can operate a receiver for a highway safely also in transit.

[0036] In addition, since a right grip rotates a wrist for opening and closing of an accelerator, this actuation switch is [arranging near a left grip] desirable.

[0037] Moreover, a simple and compact configuration is realizable by unifying the dc-battery and loudspeaker other than a receiving antenna, a receive section, a control section, and a display.

[0038] Since it is a simple configuration, it also has the advantage which is easy to waterproof.

[0039] By the usual four-flower vehicle, since it had the loudspeaker in the condition near a standard equipment, a beacon receiver and a loudspeaker did not need to be unified.

[0040] On the contrary, as long as there is nothing to others, the beacon receiver which the two-flower vehicle by which it already has the loudspeaker is very rare, and is difficult for attaching a loudspeaker simple substance in a two-flower vehicle, and does not equip with a loudspeaker will always supervise a display, operating, and its signal of a purport which received information is inconvenient, and that of it

is also dangerous.

[0041] Moreover, a receiver is simple, and since the complicated means is not further used for the immobilization, when an operator separates from a motorbike, removal of a receiver is easy, and there is effectiveness which can prevent a theft. Moreover, since it has covered with rubber slab downward, rubber slab can make vibration absorb.

[0042] Moreover, actuation is easy by limiting the number of the actuation switches of a receiver to two pieces. Now, the configuration explanatory view of a receive section 12 (drawing 3) is shown in drawing 10 , and actuation of a receive section 12 is explained with reference to this drawing.

[0043] The information between highway and vehicle received with the receiving antenna 3 is band-limited in BPF(band pass filter) 31, in order to prevent mixing of other electric waves, and it is supplied to the base of NPN transistor 34 in the RF amplifying circuit 36.

[0044] The emitter electrode is grounded, and the high frequency coil 32 is further connected to the collector electrode, and NPN transistor 34 performs a magnification operation with two or more surrounding passive elements (not shown).

[0045] From the connection of the collector electrode of NPN transistor 34, and a high frequency coil 32, the information between highway and vehicle amplified by NPN transistor 34 is taken out as an electrical signal, and is supplied to the base of NPN transistor 35 prepared independently.

[0046] An emitter electrode is grounded, and the high frequency coil 33 is connected to the collector electrode, and NPN transistor 35 performs a magnification operation with two or more surrounding passive elements (not shown).

[0047] From the collector electrode of NPN transistor 35, and the connection of a high frequency coil 33, the information between highway and vehicle amplified by NPN transistor 35 is taken out as an electrical signal, and is supplied to a mixer circuit 37.

[0048] A local dispatch signal is supplied to a mixer circuit 37 at the information between highway and vehicle and coincidence which were amplified in the RF amplifying circuit 36.

[0049] A local dispatch signal is generated by VCO (voltage controlled oscillator)60, and the output is taken out from the collector terminal of NPN transistor 54 as an electrical signal.

[0050] The resonance inductance 55 and the variable capacitance diode 56 are connected to the base terminal of a transistor 54.

[0051] The output of VCO60 is supplied to the base terminal of NPN transistor 53.

[0052] An emitter terminal is grounded by GND, and the high frequency coil 51 is connected to the collector terminal, and NPN transistor 53 performs a magnification operation with two or more surrounding passive elements (not shown) further.

[0053] From the collector of NPN transistor 53, and the joint of a high frequency coil 51, the electrical signal amplified by NPN transistor 53 is taken out as an electrical signal, and is supplied to the base terminal of NPN transistor 52.

[0054] An emitter electrode is grounded in a gland, and the high frequency coil 50 is connected to the collector electrode, and NPN transistor 52 operates as an amplifying circuit with two or more surrounding passive elements (not shown).

[0055] From the collector electrode of NPN transistor 52, and the joint of a high frequency coil 50, the electrical signal amplified by NPN transistor 52 is taken out as an electrical signal, and is supplied to ** and a mixer circuit 37.

[0056] The base terminal of NPN transistor 52 is connected with a counting-down circuit 57, and N (N is integer) dividing of the local dispatch signal is carried out. The signal generated with the counting-down circuit 57 and the reference signal taken out from the Xtal transmitter 59 are compared by the phase comparator 58.

[0057] It connects and a phase comparator 58 and the base electrode of NPN transistor 54 control the dispatch frequency of VCO60 based on the comparison result of a phase comparator 58.

[0058] In a mixer circuit 37, frequency conversion of the RF signal is carried out to a low frequency signal, and the so-called IF signal (intermediate frequency signal) is generated.

[0059] The IF signal generated in the mixer circuit 37 is supplied to the gate 2 of dual gate MOS FET

(field effect transistor) 38. The output voltage of AGC (automatic gain control circuit) is applied to the gate 1 of dual gate MOS FET 38, capacity 39 and resistance 42 are connected with the source between glands, and resistance 40 is connected with the source between power sources.

[0060] Moreover, a high frequency coil 41 is also connected with a drain between power sources, and a drain is further connected with BPF43 which is a band pass filter.

[0061] The IF signal band-limited by BPF43 is supplied to the gate 2 of dual gate MOS FET 44. The output voltage of AGC is applied to the gate 1 of dual gate MOS FET 44, capacity 45 and resistance 48 are connected with the source between glands, and resistance 46 is connected with the source between power sources.

[0062] Moreover, a high frequency coil 47 is connected with a drain between power sources, and the drain is further connected to the input terminal of the AM demodulator circuit 63 and the GMSK demodulator circuit 66.

[0063] In the AM demodulator circuit 63, the AM wave detector 61 performs AM detection first, and the detection output is supplied to the AGC generating circuit 62.

[0064] The output voltage of AGC is fed back to the gate 2 of dual gate MOS FETs 38 and 44, and controls the amplification degree of a dual gate MOS FET, or an attenuation by the AGC generating circuit 62.

[0065] After sequential supply is carried out and an unnecessary frequency component is removed by coincidence at BPF(band pass filter) 67 and a comparator 68, signal transformation of the output of the AM wave detector 61 is carried out to it to a square wave.

[0066] On the other hand, in the GMSK demodulator circuit 66, after carrying out amplitude limiting by the limiter 64, GMSK detection processing is performed. With a low pass filter (LPF) 69, the output of the GMSK demodulator circuit 66 removes an unnecessary frequency component, aims at improvement in the so-called S/N, and carries out signal transformation to a square wave with a comparator 70.

[0067] The output of comparators 68 and 70 is supplied through terminals 71 and 72 at a control section, respectively (13 in [drawing 3](#)).

[0068] Now, [drawing 11](#) is the explanatory view of a control section.

[0069] The terminal 73 is connected with the terminal 72 and the data signal by which the GMSK recovery was carried out from the receive section is supplied. The clock and synchronization which carry out bulk generation are taken in the clock regenerative circuit 75, and the data signal supplied to the terminal 73 supplies the data and the clock which took this synchronization to a gate array 76.

[0070] It connects with the terminal 71 and a terminal 74 supplies the location detecting signal by which AM recovery was carried out to a gate array 76.

[0071] In the gate array 76 interior, the De Dis scramble (it calls it "a scramble" to perform encryption processing for the security of data, and calls it "the De Dis scramble" to cancel this scramble) of data, CRC count, the transit direction judging of a car, etc. are processed.

[0072] IC83 for a display changes into the RGB code for monitor displays the received data by which it was processed by the gate array 76.

[0073] A monitor 84 (it corresponds to the display 14 of [drawing 3](#)) displays the signal from IC83 for a display.

[0074] Moreover, what is necessary is just to carry out an actuation switch to the configuration connected through the port for an interface and the switch interface 90 of CPU81.

[0075] CPU81 analyzes the directions given through the actuation switch, and they execute the instruction corresponding to the directions with which it was given.

[0076] Moreover, the loudspeaker drive circuit 91 for making a loudspeaker (1 of [drawing 3](#)) drive is also connected to CPU81, when the information on a purport that a loudspeaker is sounded is extracted, this loudspeaker drive circuit 91 is made to drive, and a loudspeaker is sounded.

[0077] As mentioned above, by receiving and carrying out signal processing of the signal from a beacon, predetermined information can be extracted and the means with which comfortable and safe operation of an operator is presented can be offered.

[0078]

[Effect of the Invention] Since the switch which operates a receiver is formed near the handle according to this invention, its hold is not released, but actuation of a receiver can be performed, and it can contribute to the safety operation of a two-flower vehicle.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the explanatory view of one example of this invention.

[Drawing 2] It is the explanatory view of a receiving antenna.

[Drawing 3] It is the block diagram of a mounted beacon receiver.

[Drawing 4] It is a flow chart explaining reception actuation of a mounted beacon receiver.

[Drawing 5] It is the explanatory view of a mounted beacon receiver and an actuation switch.

[Drawing 6] It is the explanatory view of an actuation switch.

[Drawing 7] It is the explanatory view of the situation of selection of the display screen.

[Drawing 8] It is a flow chart explaining the example of carbon buttons a and b of operation.

[Drawing 9] It is the explanatory view of an actuation switch.

[Drawing 10] It is the explanatory view of one example of this invention.

[Drawing 11] It is the explanatory view of one example of this invention.

[Description of Notations]

1 [-- Belt,] -- A loudspeaker, 2 -- A liquid crystal display, 3 -- A receiving antenna, 4 5 -- An actuation switch attaching jack, 6 -- Volume control volume, 7 -- Dc-battery, 8 [-- Ground pattern,] -- Rubber slab, 9 -- A pattern, 10 -- A dielectric, 11 12 [-- Actuation switch (the a carbon button),] -- A receive section, 13 -- A control section, 14 -- A display, 15 16 -- An actuation switch (the b carbon button), 17 -- A handle grip, 18 -- Receiver attaching jack, 19 -- An actuation switch fork clip, 20 -- A receiver, 21 -- Actuation switch, 22 [-- Band pass filter (BPF),] -- A fuel tank, 23 -- Cursor, 24 -- An operator's hand, 31 32 -- A high frequency coil, 33 -- A high frequency coil, 34 -- NPN transistor, 35 -- An NPN transistor, 36 -- RF amplifier, 37 -- Mixer circuit, 38 [-- High frequency coil,] -- A dual gate MOS FET, 39 -- Capacity, 40 -- Resistance, 41 42 -- Resistance, 43 -- A band pass filter, 44 -- Dual gate MOS FET, 45 [-- Resistance, 49 / -- IF and an AGC circuit,] -- Capacity, 46 -- Resistance, 47 -- A high frequency coil, 48 50 -- A high frequency coil, 51 -- A high frequency coil, 52 -- NPN transistor, 53 -- An NPN transistor, 54 -- An NPN transistor, 55 -- Resonance inductance, 56 -- Variable capacitance diode, 57 -- A counting-down circuit, 58 -- Phase comparator, 59 [-- AGC generating circuit,] -- TCXO, 60 -- VCO, 61 -- AM wave detector, 62 63 [-- GMSK demodulator circuit,] -- AM demodulator circuit, 64 -- A limiter, 65 -- A GMSK detector circuit, 66 67 -- A band pass filter, 68 -- A comparator, 69 -- Low pass filter, 70 [-- A terminal, 74 / -- Terminal,] -- A comparator, 71 -- A terminal, 72 -- A terminal, 73 75 [-- An oscillator, 79 / -- An oscillator, 80 / -- ROM, 81 / -- CPU, 82 / -- An oscillator, 83 / -- IC for a display, 84 / -- A monitor, 90 / -- A switch interface, 91 / -- Loudspeaker drive circuit] -- A clock regenerative circuit, 76 -- A gate array, 77 -- RAM, 78

[Translation done.]

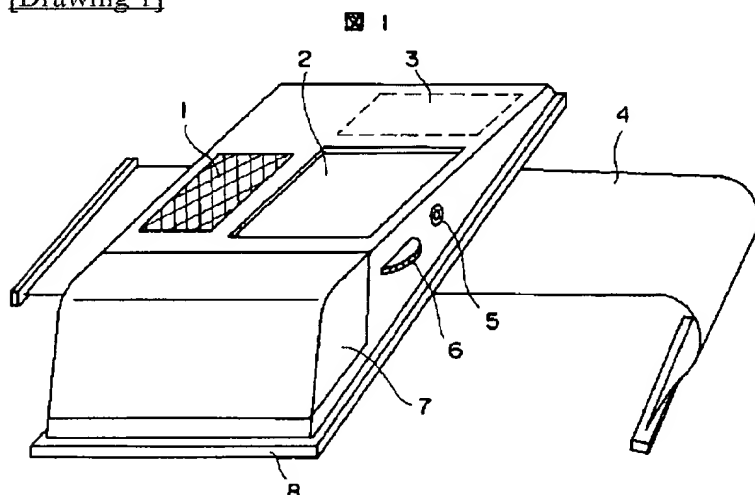
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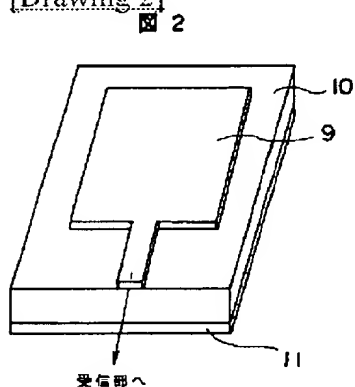
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DRAWINGS

[Drawing 1]

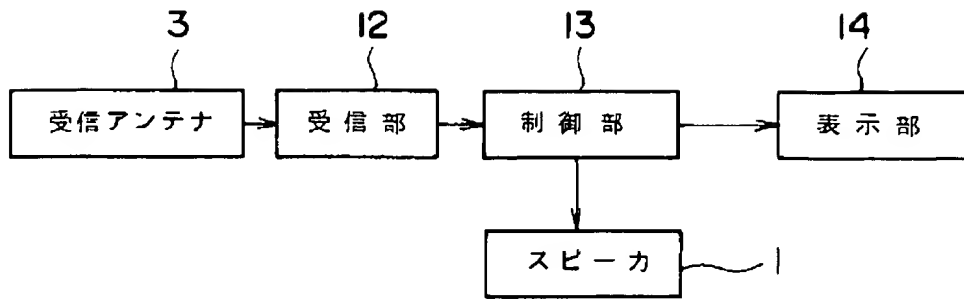


[Drawing 2]



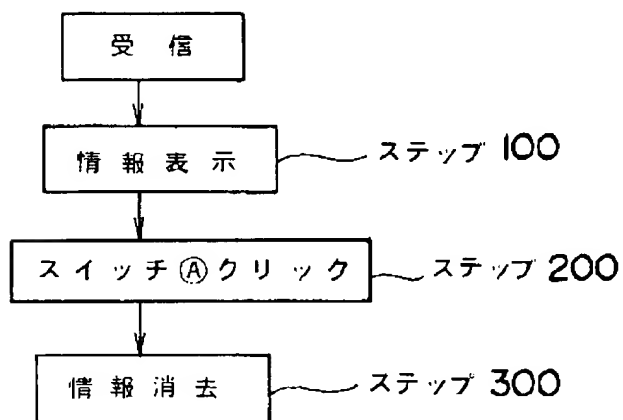
[Drawing 3]

図 3



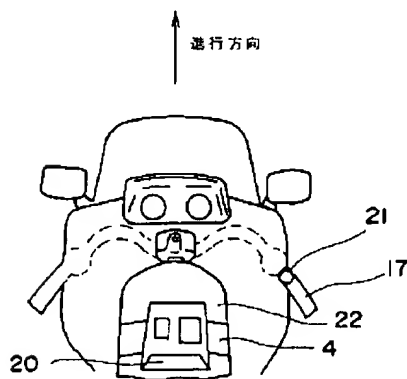
[Drawing 4]

図 4



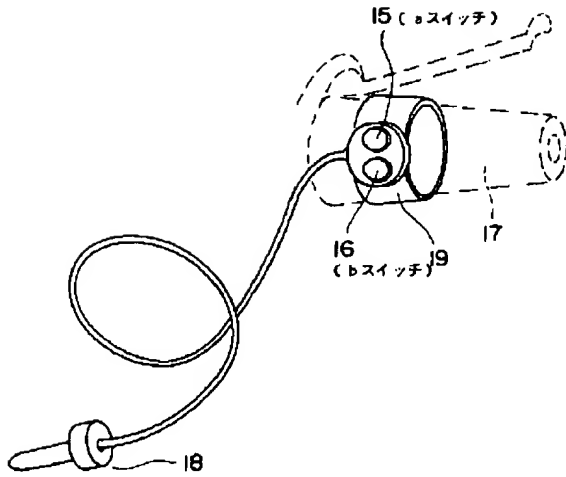
[Drawing 5]

図 5



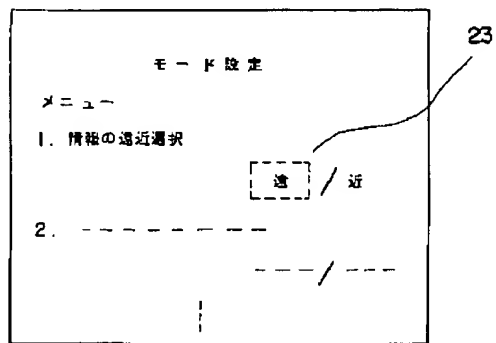
[Drawing 6]

図 6



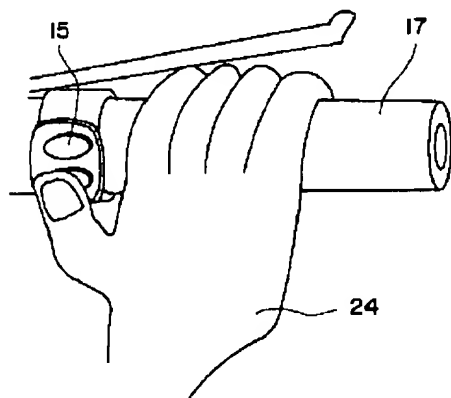
[Drawing 7]

図 7



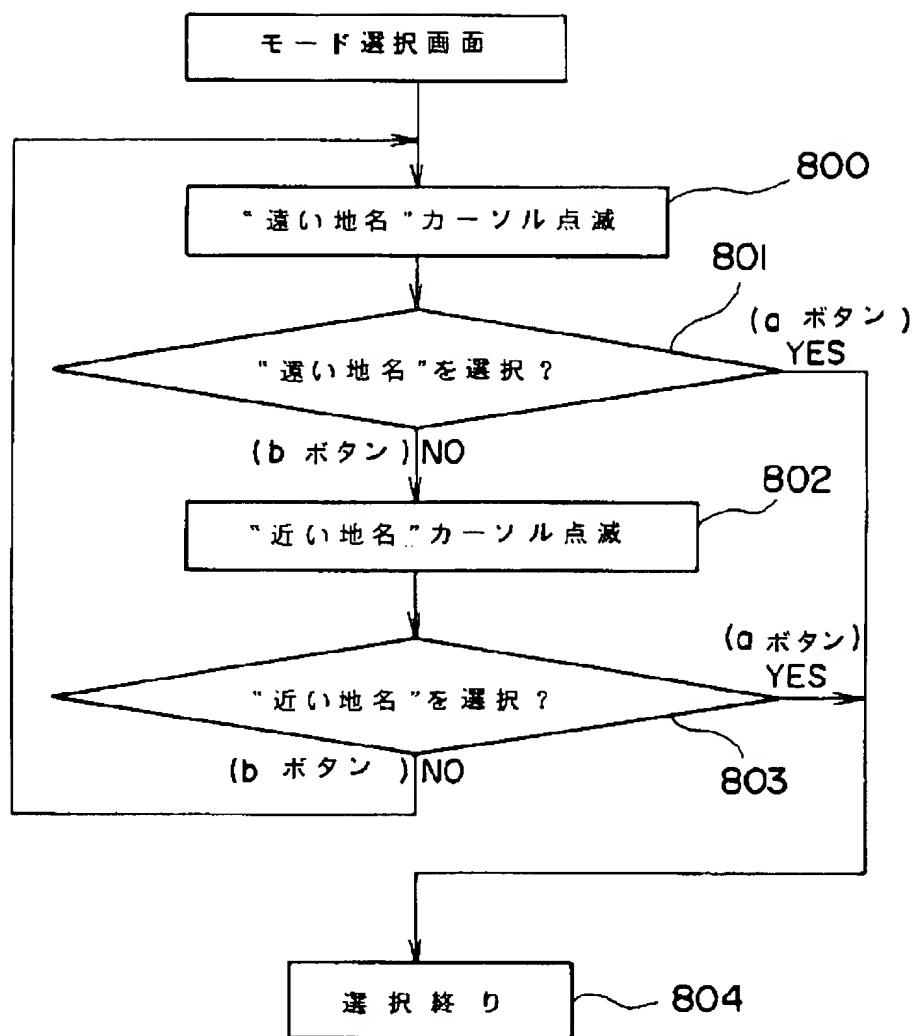
[Drawing 9]

図 9

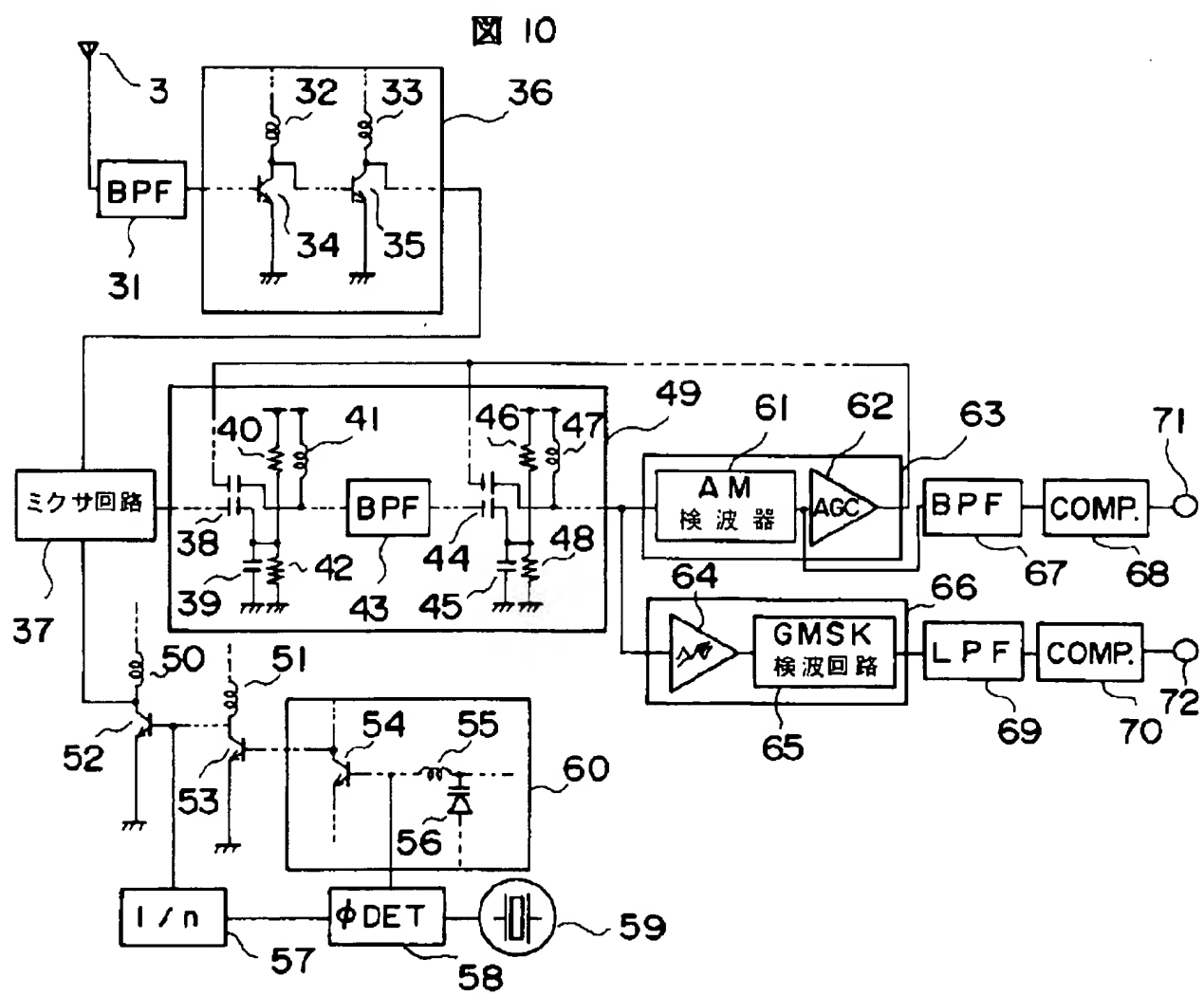


[Drawing 8]

図 8

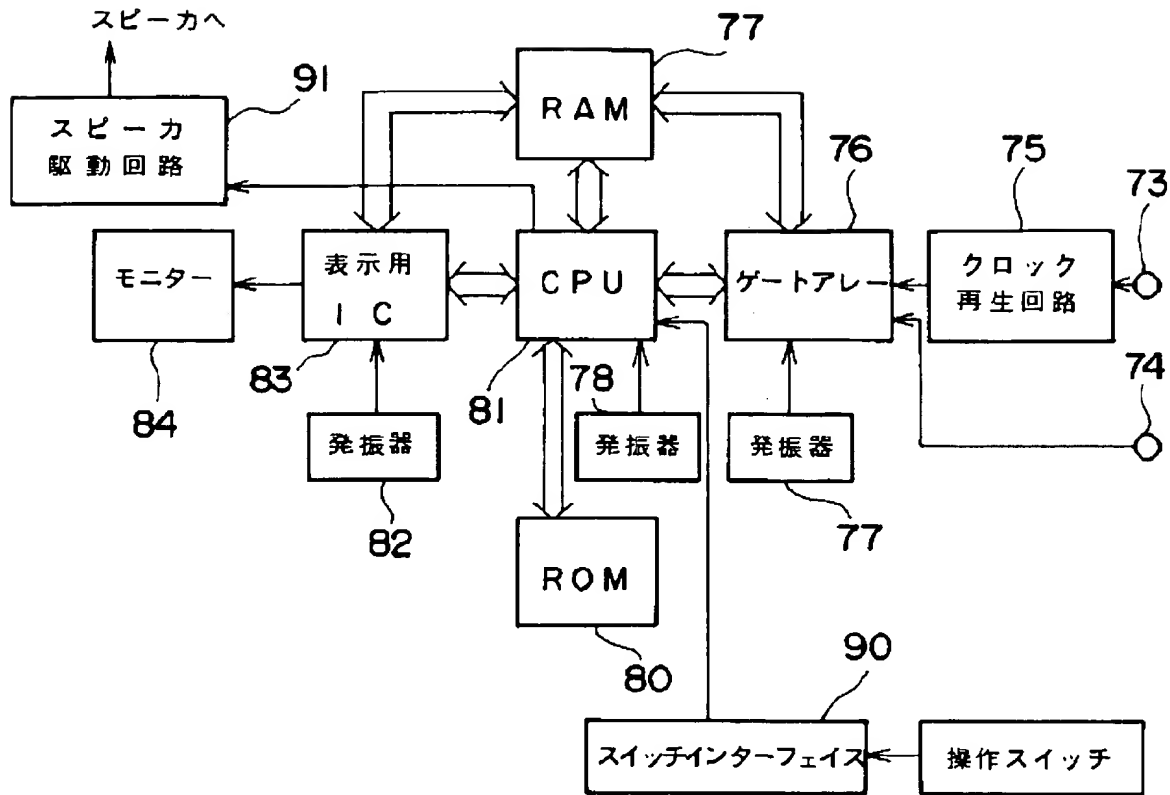


[Drawing 10]



[Drawing 11]

図 11



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